WHAT IS CLAIMED IS:

1. A device for determining whether or not an image is blurred, the device comprising:

an input part for receiving an image;

a block classification part for dividing the received image into blocks and classifying the divided blocks into character blocks and background blocks;

a character block energy calculation part for calculating an average energy ratio of the character blocks; and

a blurring detection part for calculating an average energy ratio of the character blocks and determining whether or not the image is blurred based on a comparison of the average energy ratio with a predetermined threshold.

2. The device of claim 1, wherein the block classification part comprises:

a block division part for dividing the received image in blocks with a predetermined size;

a Discrete Cosine Transform (DCT) conversion part for DCT-converting the blocks output from the block division part;

an energy calculation part for calculating a sum of absolute values of dominant DCT coefficients in each of the DCT-converted blocks, and outputting the sum as an energy value of the corresponding block;

a threshold calculation part for summing the energy values of the respective blocks, output from the energy calculation part, and generating a threshold by dividing the summed energy value by the total number of the blocks, for averaging; and

a block decision part for sequentially receiving the energy values of the blocks, output from the energy calculation part, and classifying the blocks as character blocks or background blocks based on a comparison of the received energy values with the threshold.

3. The device of claim 2, wherein each of the blocks has a size of 8×8 pixels, and the energy value of each block is calculated by

$$S^k = \sum_{i=1}^{9} \left| D_i^k \right|$$

where $\left| D_i^k \right|$ denotes an i^{th} dominant DCT coefficient of a k^{th} block, and S^k denotes a sum of absolute values of dominant DCT coefficients in the k^{th} block.

4. The device of claim 2, wherein the character block energy calculation part comprises:

an energy ratio calculation part for calculating an energy ratio of DCT coefficients of each of the classified blocks; and

an average energy ratio calculation part for calculating an average energy ratio of character blocks by averaging energy ratios of the character blocks.

5. The device of claim 4, wherein the energy ratio calculation part calculates an energy ratio of DCT coefficients of each character block in accordance with the following equation (1), and the average energy ratio calculation part calculates an average energy ratio in accordance with the following equation (2);

$$R^k = \frac{\sum\limits_{\substack{m \ n \\ (m,n) \in \Omega_L}} \sum \left| L_{m,n}^k \right|}{\sum\limits_{\substack{m \ n \\ (m,n) \in \Omega_L}} \sum \left| L_{m,n}^k \right| + \sum\limits_{\substack{m \ n \\ (m,n) \in \Omega_H}} \sum \left| H_{m,n}^k \right|} \quad \cdots\cdots\cdots (1)$$

where, $\Omega_L = \{(m,n) | m,n = 0, \dots, M-1, m+n = 1, \dots, \frac{M}{4}\}$;

$$\Omega_H = \{(m,n) | m,n = 0, \dots, M-1, m+n = \frac{M}{4}+1, \dots, \frac{3M}{4}\};$$

$L_{m,n}^k$ denotes a DCT coefficient of a low-frequency component in a (m, n) point of a k^{th} block; and

$H^k_{m,n}$ denotes a DCT coefficient of a high-frequency component in a (m, n) point of a k^{th} block,

$$\langle R^k \rangle = \frac{1}{TCN} \sum_{k=1}^{TCN} R^k \quad \ldots\ldots\ldots (2)$$

where TCN denotes the total number of character blocks.

6. The device of claim 5, wherein in the energy ratio calculation part, m+n=1 and 2 for $L_{m,n}$, and m+n=3, 4, 5 and 6 for $H_{m,n}$.

7. A method for determining whether or not an image is blurred, the method comprising the steps of:

receiving an image;

dividing the received image into blocks and classifying the divided blocks into character blocks and background blocks;

calculating an average energy ratio of the character blocks; and

calculating an average energy ratio of the character blocks and determining whether or not the image is blurred based on a comparison of the average energy ratio with a predetermined threshold.

8. The method of claim 7, wherein the block classification step further comprises the steps of:

dividing the received image in blocks having a predetermined size;

Discrete Cosine Transform (DCT) converting the blocks;

calculating a sum of absolute values of dominant DCT coefficients, and outputting the sum as an energy value of a corresponding block;

summing the energy values of the respective blocks, and generating a threshold by dividing the summed energy value by the total number of the blocks for averaging; and

sequentially receiving the energy values of the blocks, and classifying

the blocks as character blocks or background blocks based on a comparison of the received energy values with the threshold.

9. The method of claim 8, wherein each of the blocks has a size of 8×8 pixels, and the energy value of each block is calculated by

$$S^k = \sum_{i=1}^{9} \left| D_i^k \right|$$

where $\left| D_i^k \right|$ denotes an i^{th} dominant DCT coefficient of a k^{th} block, and S^k denotes a sum of absolute values of dominant DCT coefficients in the k^{th} block.

10. The method of claim 8, wherein the step of calculating the character block energy further comprises the steps of:

calculating an energy ratio of DCT coefficients of each of the classified blocks; and

calculating an average energy ratio of character blocks by averaging energy ratios of the character blocks.

11. The method of claim 10, wherein the step of calculating the energy ratio further comprises the steps of:

calculating an energy ratio of DCT coefficients of each character block in accordance with the following equation (1), and the average energy ratio calculation part calculates an average energy ratio in accordance with the following equation (2);

$$R^k = \frac{\sum\limits_{m} \sum\limits_{n}_{(m,n) \in \Omega_L} \left| L_{m,n}^k \right|}{\sum\limits_{m} \sum\limits_{n}_{(m,n) \in \Omega_L} \left| L_{m,n}^k \right| + \sum\limits_{m} \sum\limits_{n}_{(m,n) \in \Omega_H} \left| H_{m,n}^k \right|} \quad \ldots\ldots\ldots (1)$$

where, $\Omega_L = \{(m,n) | m,n = 0, \ldots, M-1, m+n = 1, \ldots, \frac{M}{4}\}$;

$$\Omega_H = \{(m,n)|m,n=0,\ldots,M-1, m+n=\frac{M}{4}+1,\ldots,\frac{3M}{4}\};$$

$L^k_{m,n}$ denotes a DCT coefficient of a low-frequency component in a (m, n) point of a k^{th} block; and

$H^k_{m,n}$ denotes a DCT coefficient of a high-frequency component in a (m, n) point of a k^{th} block,

$$\langle R^k \rangle = \frac{1}{TCN}\sum_{k=1}^{TCN} R^k \quad \ldots\ldots\ldots (2)$$

where TCN denotes the total number of character blocks.

12. The method of claim 10, wherein for the step of calculating the energy ratio, m+n=1 and 2 for $L_{m,n}$, and m+n=3, 4, 5 and 6 for $H_{m,n}$.